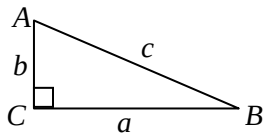
Right Triangles

Long-Term Memory Review
Review 1

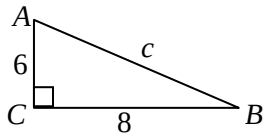
1. Is the statement true or false? If it is false, rewrite it to make it true.
   A right triangle has two acute angles.

2. The Pythagorean Theorem for the triangle shown would be $a^2 + b^2 = c^2$.
   Fill in the Blank: *a* and *b* are the lengths of the legs and *c* is the length of the _____.



3. A Pythagorean Triple is a group of three whole numbers which could be sides of a right triangle.
   Show that the triple 3, 4, 5 is a Pythagorean Triple.

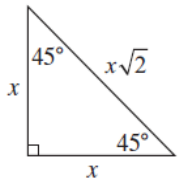
4. Calculate the missing side of the right triangle.



5. In a right triangle, the trigonometric ratios are $\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$, $\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$, and $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$. Write the ratio for $\tan A$ in the right triangle used in Example 4.

6. A 45°-45°-90° is a special right triangle that is also isosceles. What does it mean for a triangle to be isosceles?

7. The relationship of the sides of a 45°-45°-90° special right triangle is shown below.



   If one of the legs has a length of 4, then what is the length of the hypotenuse?

Right Triangles

Long-Term Memory Review
Review 2

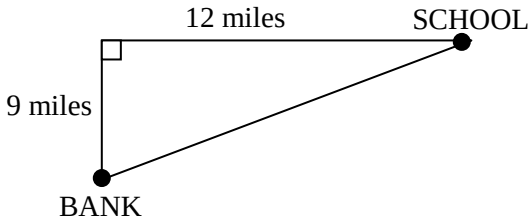
1. Can a right triangle have an obtuse angle? Explain.

2. Is the statement true or false? If it is false, rewrite it to make it true.
   The Pythagorean Theorem states that the difference of the legs squared is equal to the hypotenuse squared.

3. Write at least three Pythagorean Triples that can be generated by the Pythagorean Triple 3, 4, 5.
   Hint: Use similar triangles.

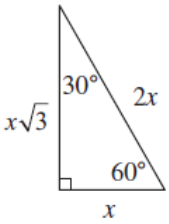
4. There are two routes that may be used to drive from the bank to the school. The routes are described below.
   - Route 1: Drive 9 miles north and then 12 miles east.
   - Route 2: Drive the straight road that goes directly to the school from the bank.

   The two routes are shown in the diagram below.



   How much longer is Route 1 than Route 2?

5. The relationship of the sides of a 30°-60°-90° special right triangle is shown below.



   If the length of the hypotenuse is 12, then what are the lengths of the legs?

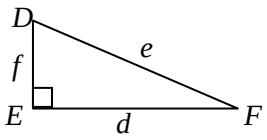
6. In a right triangle, the trigonometric ratios are $\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$, $\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$, and $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$. Write the ratio for $\sin 30^\circ$. Hint: Use the triangle from Example 5.

Right Triangles

Long-Term Memory Review
Review 3

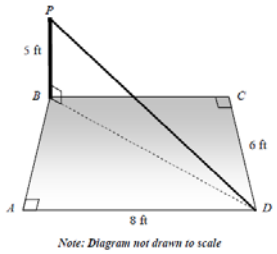
1. What is the name of the **longest** side of a right triangle?

2. Write the Pythagorean Theorem for the right triangle shown.



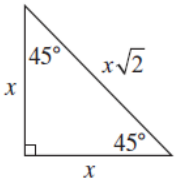
3. List at least 2 Pythagorean Triples other than 3, 4, 5 or those similar to a 3, 4, 5.

4. In the diagram below, a 5-foot pole $\overline{BP}$ is erected at the corner of an 8-foot by 6-foot rectangular concrete pad *ABCD*. The pole is perpendicular to the pad and anchored with a guy wire $\overline{PD}$.



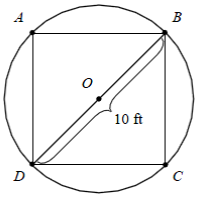
What is the length of the guy wire, *PD*, in feet?

5. The relationship of the sides of a 45°-45°-90° special right triangle is shown below.



What are the lengths of the legs if the length of the hypotenuse is 10?

6. In the diagram below, square *ABCD* is inscribed inside circle *O*. The diameter of circle *O* is 10 feet.



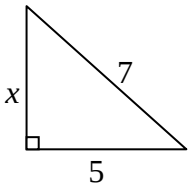
What is the area of triangle *BCD*?

Right Triangles

Long-Term Memory Review
Review 4

1. Is the statement true or false? If it is false, rewrite it to make it true.
   In a triangle, if the sum of two sides squared equals the third side squared, then the triangle is a right triangle.

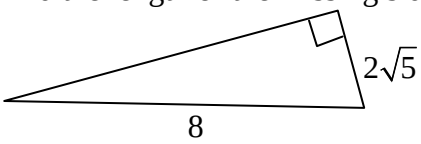
2. A right triangle is shown below.



   Which equation represents the value of x?

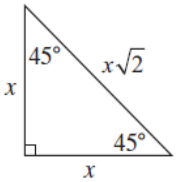
   A. $x = \sqrt{7^2 + 5^2}$ B. $x = 7^2 - 5^2$ C. $x = 7^2 + 5^2$ D. $x = \sqrt{7^2 - 5^2}$

3. Find the length of the missing side of the right triangle shown below.



4. If the length of a leg of a right triangle is 10 and the hypotenuse is 26, what is the length of the other leg?

5. The relationship of the sides of a 45°-45°-90° special right triangle is shown below, as well as the trigonometric ratios for a right triangle.

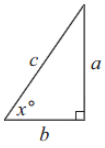


Trigonometric Ratios

$\sin x = \frac{a}{c}$

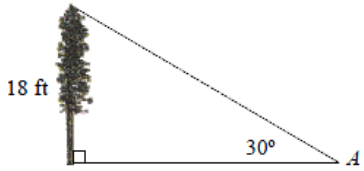
$\cos x = \frac{b}{c}$

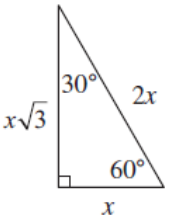
$\tan x = \frac{a}{b}$



   What is the value of $\cos 45^\circ$?

6. The top of an 18-foot tall tree is at an angle of elevation of 30° from a point A on level ground. (The relationship of the sides of a 30°-60°-90° special right triangle is also provided.)





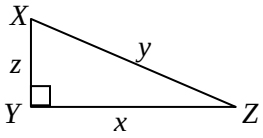
   How far from the base of the tree is point A?

Right Triangles

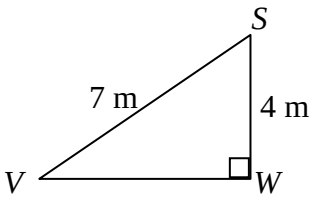
Long-Term Memory Review
Quiz

1. Is the statement true or false? If it is false, rewrite it to make it true.
   A triangle with side lengths 5, 8, and 10 is a right triangle.

2. Write the Pythagorean Theorem for the right triangle shown.



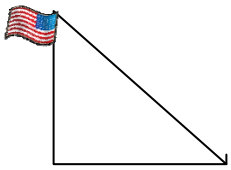
3. In right triangle *SVW*, shown below, the length of side $\overline{WS}$ is 4 meters (m), and the length of side $\overline{SV}$ is 7 m.



   What is the length of side $\overline{VW}$?

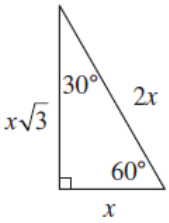
4. What is the length of the hypotenuse of a right triangle if the lengths of the two legs are 7 and 24?

5. A flagpole stands 15 feet high. A wire that runs from the top of the flagpole to a stake in the ground is 20 feet long, as shown in the diagram.



   How far is it from the base of the flagpole to the stake in the ground?

6. The relationship of the sides of a 30°-60°-90° special right triangle is shown below.



   If the length of the longest leg is $5\sqrt{3}$, then what is the length of the hypotenuse?

Right Triangles

Long-Term Memory Review

ANSWERS

Review 1 – Answers

1. True
2. hypotenuse
3. $3^2 + 4^2 = 9 + 16 = 25 = 5^2$
4. 10
5. $\tan A = \frac{8}{6} = \frac{4}{3}$
6. Two congruent sides
7. $4\sqrt{2}$

Review 2 Answers

1. No – an obtuse angle (> 90°) plus a right angle (90°) would equal a number greater than 180°
2. False – The Pythagorean Theorem states that the **sum** of the legs squared is equal to the hypotenuse squared.
3. Sample answers: 6, 8, 10; 9, 12, 15; 30, 40, 50; …
4. $21 - 15 = 6$ miles longer
5. $6, 6\sqrt{3}$
6. $\sin 30^\circ = \frac{1}{2}$

Review 3 Answers

1. hypotenuse
2. $f^2 + d^2 = e^2$
3. Sample answers: 5, 12, 13; 7, 24, 25; 8, 15, 17
4. $\sqrt{125} = 5\sqrt{5}$
5. $\frac{10}{\sqrt{2}} = 5\sqrt{2}$
6. 50 ft^2

Review 4 Answers

1. True
2. D
3. $\sqrt{44} = 2\sqrt{11}$
4. 24
5. $\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
6. $18\sqrt{3}$ ft

Quiz – Answers

1. False: A triangle with side lengths 6, 8, and 10 is a right triangle. OR A triangle with side lengths 5, 8, and 10 is an obtuse triangle.
2. $x^2 + z^2 = y^2$
3. $VW = \sqrt{33}$
4. 25
5. $\sqrt{175} = 5\sqrt{7}$ ft
6. 10